STATE OF CALIFORNIA — THE RESOURCES AGENCY PETE WILSON, *Governor*

CALIFORNIA ENERGY COMMISSION
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STATE OF CALIFORNIA
ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

Implementation of	**)**	**Docket No. 98-RDD-GRDA**
Geothermal Program	**)**	**NOTICE OF INFORMATIONAL WORKSHOP**
	)	**Re: Implementation of Geothermal Program**

NOTICE OF RESEARCH, DEVELOPMENT AND DEMONSTRATION COMMITTEE
GEOTHERMAL RESOURCES DEVELOPMENT ACCOUNT
INFORMATIONAL WORKSHOP
THURSDAY, DECEMBER 3, 1998
Beginning at 1:30 p.m. and ending at 5 p.m.
First Floor, Hearing Room A
California Energy Commission
1516 Ninth Street
Sacramento, California
(wheelchair accessible)

At the direction of the Commission's Research, Development and Demonstration (RD&D) Committee, the Geothermal Program staff began last July to redefine the purpose and scope of the Geothermal Program. Geothermal stakeholders became involved in this process through an Internet discussion group and at a staff-led workshop on August 25 where participants defined the most important problems facing the geothermal industry. Using criteria suggested by the stakeholders and later prioritized by the RD&D Committee, staff analyzed the advantages and disadvantages of using the Geothermal Resources Development Account (GRDA) to address these problems and developed program recommendations. The attached *Summary of Staff Recommendations on Revising the Geothermal Program* will serve as the focus for discussion at the GRDA Informational Workshop. This report summarizes the forty-four page *Staff Recommendations on Revising the Geothermal Program* which you can download from the Commission's geothermal Web site: <http://www.energy.ca.gov/development/geothermal/>. You can also request that a copy be mailed to you by calling Bob Hare at (916) 653-8685 or by e-mail at <bhare@energy.state.ca.us>. The informational workshop gives the Commission's RD&D Committee opportunity to hear stakeholder comments on targeting GRDA funding, improving program administration, and possible legislative changes. The agenda for the workshop is page eight of the summary.

Public comments are particularly sought in the following areas:

· What are the most important problems that the GRDA should address?

- What are the most beneficial funding priorities and to what degree should these priorities limit future funding decisions?
- What administrative changes should be made to the Geothermal Program?
- Should the Commission pursue GRDA statutory changes and, if so, which changes should be pursued?

Written Comments

Due to the limited time for the workshop, written comments may be submitted prior to or at the workshop. A package of 12 copies of written comments should be sent or delivered to the Commission's Docket Unit, on or before December 3, 1998, and must include the Docket Number for this proceeding (i.e., Docket No. 98-RDD-GRDA) on the cover page. Please submit material to be docketed to the following address:

California Energy Commission
Re: Docket No. 98-RDD-GRDA
Docket Unit, MS-4
1516 Ninth Street
Sacramento, CA 95814-5512

Comments may also be sent by e-mail to the Docket Office at: <DOCKET@energy.state.ca.us>. All information submitted in this manner will be available via the Commission's geothermal Web site: <http://www.energy.ca.gov/development/geothermal/>.

Assistance

Members of the public who would like more information on how to participate in this proceeding may contact the Commission's Public Adviser, Roberta Mendonca, at (916) 654-4489 or toll free at (800) 822-6228 or FAX at (916) 654-4403 or by e-mail at <rmendonc@energy.state.ca.us>. Voice mail messages will be returned within 24 hours during the regular working hours. The Public Adviser provides assistance to the public regarding Commission procedures and participation in Commission activities. If you require special accommodation, please contact Robert Sifuentes at (916) 654-5004 or by e-mail at <rsifuent@energy.state.ca.us>.

Members of the public with technical questions regarding the subject matter of this Notice or the Geothermal Program may contact Bob Hare at (916) 653-8685. News media inquires should be directed to Assistant Executive director Claudia Chandler at (916) 654-4989.

ENERGY RESOURCES CONSERVATION
AND DEVELOPMENT COMMISSION

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DAVID A ROHY, Ph.D.
Vice Chair and Presiding Member
RD&D Committee

Date Mailed: November 18, 1998

Geothermal Program Lists: 510 and 511

Summary of Staff Recommendations on Revising the Geothermal Program (and Informational Workshop Agenda)

At the direction of the Research, Development and Demonstration (RD&D) Committee, staff are redefining the purpose and scope of the Geothermal Program. The process seeks to revise the Geothermal Program so that it:

1. Addresses The Most Important Problems Facing The Geothermal Community.
2. Provides The Greatest Public Benefit To California.
3. Attracts The Highest-Quality Proposals And Leverages Geothermal Resources Development Account (Grda) Funds.
4. Minimizes Overlap And Is Compatible With Programs Established Under Assembly Bill 1890.
5. Minimizes Geothermal Program Staffing.
6. Is Efficient And User-Friendly.

This staff process is stakeholder driven. Through an Internet discussion group and later at a stakeholder workshop, stakeholders defined the most important problems facing the geothermal industry. Using criteria suggested by the stakeholders and later prioritized by the Commission's RD&D Committee, staff analyzed the advantages and disadvantages of using the GRDA to address these problems and have developed program recommendations. The following staff recommendations cover what California geothermal problems the GRDA should address and how the administration of this program should be improved. Possible legislative changes are also listed.

Staff GRDA Use Recommendations

One of the goals of the GRDA Use Recommendation process is to focus GRDA funding on solving California's most critical geothermal related problems. These preferred GRDA uses will define the project proposal types that will be encouraged in future solicitations. Project proposals that effectively address these critical problems will be given particular funding consideration.

According to staff analysis of stakeholder input, the most critical problems facing California's geothermal community include: lowering the life-cycle costs of geothermal electricity generation, proving and lowering the costs of enhancing the productivity of geothermal systems, and lowering the installation costs of geothermal heat pumps. Geothermal Program staff recommends narrowing the focus of the program to short-term and medium-term Research, Development, and Demonstration (RD&D) activities which directly address these problems. Of the eighteen problems analyzed by staff, these three problems show the greatest potential for creating the most public benefit and for leveraging funds, while fitting within the program's existing mandate, and requiring

minimal Energy Commission staffing. Additionally, where a critical need is demonstrated, staff recommends funding for geothermal development planning and geothermally-related environmental impact mitigation.

Staff recommendations are based on current conditions; the most critical geothermal problems may change in the future. To accommodate changing conditions, staff recommends conducting a program review every three years.

Staff recommendations for using the GRDA to address particular problem areas are grouped below by interest area. A "YES" indicates staff support for using the GRDA to address a problem whereas a "NO" marks problems where staff recommends no GRDA funding emphasis.

Geothermal Electric Power Generation Problems

The high life-cycle cost of generating electricity is the single most important problem limiting geothermal development in California. A key way to address this problem is through RD&D. Generation problems not recommended for GRDA funding are better addressed by other programs, not expected to achieve the desired result, or are unnecessary.

YES: Generation Problem 1: *High life-cycle costs will make it difficult for California's geothermal electric power plants to compete in the deregulated market.*
Rationale: Good RD&D strategies to lower costs in the short-term exist with the potential to benefit the entire industry. GRDA funding can substantially contribute to these RD&D efforts.

YES: Generation Problem 2: *The techniques for enhancing the productivity of geothermal systems are unproved and too expensive.*
Rationale: Good RD&D strategies to lowering costs in the short- to mid-term exist with the potential to benefit the entire industry. GRDA funding can substantially contribute to these RD&D efforts.

NO: Generation Problem 3: *The market power price does not reflect the environmental and other benefits of generating electricity from geothermal energy resources.*
Rationale: Externality studies are unlikely to influence the Legislature to pass renewable price supports given Assembly Bill (AB) 1890 directive toward achieving competitiveness. Green marketing is a better strategy and this is being done by the Renewables Program.

NO: Generation Problem 4: *The lack of funding for developing and commercializing California's undeveloped and unproved high-temperature resources.*
Rationale: Statewide resource characterization studies are not needed. Power plant characterization risks and costs are not appropriate for the GRDA.

Yes: Generation Problem 5: *Lack of funding for geothermal development planning and geothermal impact mitigation.*
Rationale: There are occasional but important and highly visible geothermal mitigation projects (e.g., the Unit 15 well abandonment project) and geothermally-related environmental enhancement projects which deserve funding consideration.

Geothermal Heat Pump Problems

Although well established in the east, south, and midwest, GHPs are slow to catch on in California due to factors such as: climate, geology, and permitting requirements. Staff agrees with stakeholders that the GHP industry in California is in an early market phase with broad infrastructure needs. There is a complex of issues impeding the widespread installations of GHP systems in California. However, due to considerations addressed below, the Geothermal Program staff believes that the GRDA should be used to address only one of the six problems outlined by stakeholders. Staff believes the GRDA is best suited to support RD&D to reduce the high initial capital costs of GHP system installations.

Problem areas not recommended for funding by the Geothermal Program staff have been addressed with GRDA funds in the past or are currently being addressed by other entities. The role of the GRDA in supporting Geothermal Heat Pump (GHP) demonstrations should be reviewed as the California Board for Energy Efficiency's funding for GHP demonstrations becomes clarified.

NO: GHP Problem 1: *The lack of funding for a stakeholder collaborative process to address institutional barriers.*
Rationale: The Energy Commission-sponsored collaborative is completed. Further collaborative tasks are now in the hands of stakeholders to complete.

NO: GHP Problem 2: *The lack of funding for demonstration sites in key facilities.*
Rationale: The GRDA should not be considered for demonstrating GHPs unless such demonstrations are not funded by the California Board for Energy Efficiency (CBEE) Program.

YES: GHP Problem 3: *The lack of funding for RD&D to lower initial capital costs*
Rationale: There are reasonable RD&D approaches to lower costs in the short-term and this is an effective way to address high initial costs of GHPs.

NO: GHP Problem 4: *The lack of funding for professional training.*
Rationale: GRDA-supported GHP Training Center results are disappointing. This activity is not fundable under existing GRDA statutes.

NO: GHP Problem 5: *The lack of funding for California GHP consumer education campaigns.*

Rationale: GHP education efforts will likely be ineffective until RD&D sufficiently lowers installation costs. This activity is also not fundable under existing GRDA statutes.

NO: GHP Problem 6: *The lack of funding for financing programs for residential applications.*
Rationale: RD&D to lower costs in the short-term is a more effective way of addressing high initial costs of GHPs. The GRDA is insufficient to support an extensive buy-down program. The GRDA should not compete with the better-funded California Board for Energy Efficiency (CBEE) Program. This activity is also not fundable under existing GRDA statutes.

Geothermal Direct-Use Application Problems

Due to the wide availability and current relatively low price of natural gas, directly using California's known low- and moderate-temperature geothermal resources is uneconomical for most sites at this time. There are few opportunities to co-fund RD&D to lower costs. As a result, co-funding partners would probably be difficult to locate and few public benefits could be expected from using the GRDA to address direct-use problems. In addition, significant Commission staffing would probably be required.

NO: Direct-Use Problem 1: *The lack of awareness of the direct uses of geothermal resources and potential use benefits.*
Rationale: Direct-use projects are currently uneconomical for most sites due to the wide availability and low cost of natural gas. This activity is also not fundable under existing GRDA statutes.

NO: Direct-Use Problem 2: *Lack of funding to explore for and characterize direct-use geothermal resources and to drill and develop direct-use demonstration and commercial projects.*
Rationale: The economics of direct-use are currently marginal. Prospecting for resources is not cost-effective and, therefore, project opportunities are limited to the few areas with both clear resource surface manifestations and high demand for the energy. Direct-use projects are currently uneconomical for most sites due to the wide availability and low cost of natural gas.

NO: Direct-Use Problem 3: *Lack of professional technical support for geothermal direct use projects, and the lack of current technical and other information.*
Rationale: Direct-use projects are currently uneconomical for most sites due to the wide availability and low cost of natural gas. Without improved economics, additional technical and professional support for direct-use projects will not result in more installations. This activity is also not fundable under existing GRDA statutes.

International Geothermal Activity Problems

Foreign business is important to many California geothermal companies. Though California companies can tap funds from the Commission's International Energy Fund, the U.S. Agency for International Development, the U.S. Trade and Development Agency, and the U.S. Department of Commerce, California's geothermal export competitors from Japan and Europe seemingly receive stronger support from their governments. New legislation would be needed to use the GRDA to address international problems.

NO: International Activity Problem 1: *The lack of country-wide geothermal and business assessments.*
Rationale: This activity is not fundable under existing GRDA statutes.

NO: International Activity Problem 2: *The lack of foreign buyer awareness of California company capabilities.*
Rationale: This activity is not fundable under existing GRDA statutes.

NO: International Activity Problem 3: *The lack of financing at competitive terms.*
Rationale: This activity is not fundable under existing GRDA statutes.

Geothermal Energy Public Education Problems

In the discussions of generation and geothermal heat pump technologies, staff has recommended funding for specific technology transfer efforts for these areas of interest. General renewable energy education is already being funded through the Commission's Renewables (Consumer Education) Program and the DOE's Office of Geothermal Technologies. General public geothermal education does not effectively address California's most critical geothermal problems of lowering the costs of electricity generation and lowering the installation costs of geothermal heat pumps. While general education cannot achieve this in the short-term, specific technology transfer efforts can effectively lower these costs by disseminating the results of cost-lowering RD&D to those who can implement these innovations in the marketplace.

NO: Education Problem: *The lack of public awareness about the benefits of geothermal power, direct-use, and geothermal heat pumps.*
Rationale: This activity is not fundable under existing GRDA statutes. Technology transfer of RD&D results will likely be more effective than general education at meeting short-term cost-reduction needs of industry. The Commission's Renewables Program is funding basic public education efforts to develop a "green" market.

Staff administrative recommendations

The Geothermal Program staff recommends immediate resumption of GRDA funding opportunities by offering a single limited-term project solicitation. This initial offering should be based on a quick revision of existing application materials according to this report's administrative streamlining recommendations. This initial solicitation will expedite support for the best project proposals that have gone unfunded since the Geothermal Program suspended solicitations at the beginning of Fiscal Year 1998. Staff recommends conducting every three years a review of Geothermal Program results, efficiency, and funding allocations among program issues.

An important result of the GRDA Use Recommendation process is the input received on improving the administration of the GRDA program. Staff has analyzed this input and recommends that the following changes be pursued (which require no new legislation) in order to promote greater efficiency and reduce administrative burden:

1. Narrow funding emphasis according to recommendations of this report.
2. Require no repayment and royalties provisions on awards.
3. Simplify application process and shorten time between application and notification of project award or rejection.
4. Adopt appropriate administrative streamlining policies (e.g., selected terms and conditions) from the Public Interest Energy Research Program.
5. Speed up reimbursement process by reducing backup information required and instituting an audit program.
6. Establish a policy that allows limited instances of co-funding the non-RD&D capital costs of demonstration projects necessary to advance needed science or technology. The justification and value of funding such non-RD&D capital costs is tied directly to the expected advancement of science or technology. It is expected that such benefits and justification for using the GRDA to support non-RD&D capital costs would diminish after the first two or three projects of this type are completed.

Possible legislative changes

Staff analysis of the GRDA's enabling statute reveals provisions which are outdated, which limit participation, have prevented Energy Commission funding of good projects, and which hinder the efficient administration of the Geothermal Program. Staff has identified possible legislative changes to improve the program. These changes cannot be implemented in this funding cycle but if pursued during the March 1999 budget change proposal window, they could be implemented as early as January 1, 2000.

One aspect of the December 3 workshop will be to explore the feasibility and advisability of seeking the following statutory changes:

1. Broaden funding eligibility to include universities, not-for-profit organizations, and other government entities.
2. Change the Geothermal Program's enabling statute to permit selecting and adding types of projects which qualify for GRDA funding administered by the Commission.
3. Facilitate statewide focus by eliminating the need for determining tangible benefits to local governments and the need for approval by the city, county, or unit of Native American government in which the project is located.
4. Establish a sliding scale for required matching funding according to the ratio of public to private benefits.
5. Allow awards in the form of contracts, grants, loans, or other financial agreements.
6. Allow different methods of solicitations including sealed competitive bids, competitive negotiation process, multiparty agreements, single source, or sole source.
7. Allow sole source contracts when the Commission determines that the cost to the state is reasonable.
8. Allow purchase of insurance.
9. Extend Administrative Procedures Act exemptions to this program.

California Energy Commission
Research, Development and Demonstration Committee

DRAFT AGENDA
Geothermal Program
GRDA Informational Workshop

December 3, 1998
1:30 p.m. to 5 p.m.
First Floor, Hearing Room A
California Energy Commission
1516 Ninth Street, Sacramento, CA

This workshop will offer the Commission's RD&D Committee opportunity to hear stakeholder comments on targeting GRDA funding, improving program administration, and possible legislative changes.

1. **Introduction and Purpose of Workshop** (15 minutes)

2. **Staff summaries of its GRDA recommendations, its administrative improvement recommendations, and possible legislative changes** (30 minutes)

3. **Public comments and Committee discussion on staff GRDA recommendations, administrative improvement recommendations, and possible legislative changes** (2.5 hours)

4. **Closing comments by RD&D Committee** (15 minutes)